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Eligibility Rules in the Canadian Job Strategy: Shifting the Burden or Targeting the Assistance?

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The findings of this paper are the personal responsibility of the author and, as such, have not been endorsed by the Members of the Economic Council of Canada.

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Foreword

The 1980s were a decade of high and persistent unemployment. The most important dimension of this was the rise in the proportion of the labour force that are "long-term unemployed," those unemployed for periods longer than six months. In fact, to some important degree the problem of unemployment is a problem of long-term unemployment.

For this reason the Unemployment Issues Group of the Economic Council has spent some time examining the issues surrounding the dimensions of long-term unemployment and the policies directed towards the long-term unemployed. This paper is authored by one of the members of this group, and is concerned specifically with the major federal initiative directed towards long-term unemployment, the Job Development Program of the Canadian Job Strategy. One of the most contentious aspects of this program has been the waiting rule that stipulates that an individual must be unemployed for 24 of the last 30 weeks before becoming eligible for program benefits. This paper discusses the rationale for such waiting rules, offers a methodology for determining the optimal length, and specifically evaluates the setting that is currently being used.

It is hoped that this research will make a contribution to the debate surrounding the structuring of the Job Development Program, but also to the broader debate of designing intervention into the labour sector at both the federal and provincial levels.

Judith Maxwell
Chairman

Abstract

This paper is concerned with the appropriate setting of the eligibility criteria for entrance into a government-sponsored program of training or wage subsidy. The focus of the discussion is upon the "sorting" role played by such rules, and an explicit attempt is made to evaluate the six-month waiting rule imposed by the Job Development Program of the Canadian Job Strategy. This rule has been the subject of some debate in the recent past and use is made of empirically determined hazard rates to suggest that it is too long. The results of an analysis of unemployment-spell data derived from the Annual Work Patterns Survey suggest that a waiting period of three to four months would be just as effective a sorting device and would reduce the dead-weight costs placed upon the unemployed. It is also found that if the existing rule were reduced to three months, the number of individuals eligible for program participation would increase by only about 12 per cent. In this light, the six-month rule does more to shift the burden of unemployment onto the unemployed than it does to target program funds upon those most in need.

Introduction

The making of labour-sector policy, like the making of economic policy in general, is an exercise in trade-offs, a balancing of the desired and the possible. Certain aspects of the trade-offs inherent in policy directed towards the unemployed, and particularly towards the long-term unemployed, are explored in this paper. The main concern is with the appropriate setting of eligibility rules for a wage subsidy or training program and can be summarized by considering two alternative policy stances. The first, an activist policy, suggests that the government identify those individuals most at risk of becoming long-term unemployed and make them eligible for the program before they actually spend a significant period of time out of work. In doing so, the deadweight costs of unemployment that the individual must bear are reduced as are the social costs in lost output. The second, a passive policy, dictates that individuals become eligible for the program only after actually having spent a considerable period unemployed. In this way the government ensures that the resources it contributes to the program are directed to those needing them most, and not towards those that would have found employment whether they received assistance or not.

The trade-off between these two policies arises because the government cannot perfectly identify the long-term unemployed *ex ante*, and because its decisions are subject to a budget constraint. The setting of the eligibility criterion serves to sort the unemployed so that those most in need may be identified. The program's revenues are thereby more effectively targeted, but at the cost of more forgone output and of a greater burden being placed upon the unemployed.

Brooks and Volker [1986], Hui and Trivedi [1985], and particularly the OECD [1987, pp. 178-83] have discussed matters related to these issues. However, the policy dilemma of concern here is being played out in Canada. In reviewing the Job Development Program, that part of the Canadian Job Strategy (CJS) intended to deal with the problems of the long-term unemployed, the Standing Committee on Labour, Employment and Immigration stated:

> most individuals are required to remain unemployed for at least six months before qualifying under this program. Although the purpose of this program is intended to address the needs of Canada's long-term unemployed, many witnesses felt that this eligibility criterion is arbitrary and self-serving. Furthermore, many individuals will undoubtedly experience unemployment for this duration in any event; however, in the meantime they are excluded from assistance and forced to wait [1988, p. 16].

On this basis the Committee went on to recommend that the six-month eligibility rule be waived for "at least a minimum of 10% of program participants

in each region" and that the rule be eliminated altogether for those residing in areas with an average annual unemployment rate above 1.5 times the national average.[1] The government's response was to accept the first recommendation, but to tersely dismiss the latter as a recommendation that "cannot [be reconciled] within the present scope and intent of the Canadian Job Strategy." The government claimed that

> the recommendations to extend the duration of training, alter the mix of training, or ease the eligibility criteria of programs would dilute the ability of the CJS to target assistance to those most in need. The practical effect of these recommendations of the Committee would be to assist almost everyone, at the expense of more fully assisting those who most need help. . . . Our goal of helping those most in need motivates us to focus scarce resources where they will do the most good [Employment and Immigration Canada, 1988, p. 6].

The purpose of this paper is to offer a partial assessment of these two contrasting viewpoints. Does a six-month waiting rule arbitrarily shift the burden of unemployment onto the unemployed, or does it target the assistance to those most in need?

Posing an evaluation of the Job Development Program in these terms places the main focus of the discussion on the "sorting" role of the eligibility rule. An intuitive description of this role, as well as some caveats and alternative interpretations, are offered in the section entitled "A Framework for the Analysis." The discussion also links the intuition to the main analytical device to be employed in the remainder of the paper, the conditional probability of leaving unemployment, or the so-called "hazard rate." The way in which knowledge of this probability can be used to determine the appropriate eligibility criterion is discussed. A description of the data, methodology, and results is presented in the section entitled "Empirical Methodology and Results." A final section summarizes the main conclusions and offers some implications for future consideration.

The analysis suggests that the government cannot rationalize a six-month rule on the basis of targeting. At the same time, however, there is little support for completely removing it. While six months is too long, a rule less than 1.5 months is too short. If the main purpose of the waiting rule is to serve as a sorting mechanism, then a requirement of somewhere between three to perhaps four months would be appropriate. Setting a three-month rule would not greatly increase the number of individuals eligible for the program. It is found that a three-month rule would lead to a 12-per-cent increase in the eligible population.

A Framework for the Analysis

The conditional probability of leaving unemployment is an often used concept in analyses of the duration of unemployment spells. This probability is

also called the "hazard rate." In this paper, the terms "conditional probability of leaving unemployment" and "hazard rate" refer to the same thing: the probability that a given unemployment spell, having already lasted a specified length of time, will come to an end in the next instant. The higher the hazard rate, the shorter the duration of the unemployment spell. The way in which this probability changes over the course of a spell of unemployment has been the subject of much inquiry because it is believed to offer a test of search theoretic models of unemployment. The focus in this paper, however, is motivated by the implications that can be drawn for labour sector policy.[2]

The hazard rate is determined by three related factors: the job search intensity of the individual; the rate at which the individual receives job offers; and the fraction of job offers that are deemed acceptable. These factors will determine the magnitude of the hazard rate and whether it varies with time spent unemployed. If an activist policy stance is to be used, the authorities must recognize how these factors work to determine the hazard rate, and to identify the individuals that have the characteristics or face the circumstances that predispose one to have a low hazard. These will be the individuals that are likely to become long-term unemployed.

The Job Development Program of the Canadian Job Strategy is implicitly based upon two assumptions. First, it is assumed that long-term unemployment is the result of the fact that individuals do not have the skills required to fill the jobs that are being created. This lack of skills reduces the rate at which job offers are made to them, lowers their probability of leaving unemployment, and hence increases the duration of their unemployment spells. This assumption is reflected in the supply-side focus of the program, and in its emphasis on skills training.[3] Second, it is assumed that those individuals prone to long-term unemployment cannot be identified until they actually spend a significant amount of time without a job. To some extent, the program attempts to target four groups – women, aboriginal peoples, persons with disabilities, and visible minorities –, but this is still not to say that the particular individuals requiring assistance can be identified. This second assumption is reflected in the six-month waiting rule.

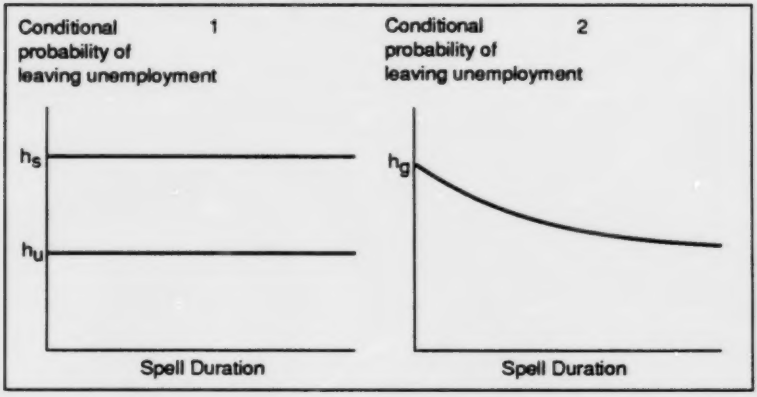
The appropriateness of the first assumption will determine how effective the program will be in improving the labour-market experience of participants. However, the main focus of this study is on the second assumption because it ultimately establishes the Job Development Program as a passive policy and determines the burden of unemployment that the unemployed must shoulder. Given that the information available to the policy authorities is limited, how can it be determined whether or not the six-month waiting rule is too long, too short, or just right?

In order to address this question, imagine a cohort of newly unemployed people that consists of two types of individuals, the skilled and the unskilled.

The former have a high hazard rate and will on average spend only a short time unemployed. These are the "short-term unemployed." The unskilled, on the other hand, have a low hazard rate and will on average spend a long time unemployed. While there will surely be members of the first group that end up unemployed for a considerable period of time, this does not reflect the fact that their skills are inappropriate. It is simply due to the "luck of the draw." Spending public funds training members of this group will only serve to reduce the resources available to the unskilled. The first panel in Chart 1 illustrates the hazard rates for the two groups: where h_s denotes the hazard rate for the skilled, and where h_u denotes the rate for the unskilled. If the policy authorities are able to classify any particular individual as belonging to one group or another, then an activist policy may be pursued; and there is no rationale for setting an eligibility rule of any length.

Chart 1

Hypothetical Hazard Rates: Individual and Group



However, given that the authorities do not have this kind of information, the question for policy becomes: How long must individuals be required to wait before it can be reasonably assumed that the bulk of the participants admitted to the program are those in need of its assistance? The answer to this question can be provided by examining the hazard rate for the entire group of the unemployed. This is illustrated in panel 2 of Chart 1. The hazard rate for the entire group of unemployed will be observed to decline over time. This occurs because the skilled leave unemployment more quickly than the unskilled. With time, the pool of remaining individuals will consist of a larger and larger proportion of unskilled individuals. As this "sorting" occurs, the group hazard rate declines and eventually approaches the actual rate of the unskilled individuals. Under this scenario there will exist some appropriate

eligibility rule that screens out that fraction of the unemployed not requiring governmental assistance.

The decline in the group hazard offers an indication of the extent of the heterogeneity in the sample of individuals and may be used to derive an appropriate eligibility rule. Some members of the unskilled population are required to bear a dead-weight cost in order to satisfy this criterion, but at the same time, the revenues of the program are more effectively targeted upon them.

Two caveats are in order. First, it should be stressed that the policy authorities are faced with a trade-off between two possible types of errors. They may give training to an individual that would not have gone on to become long-term unemployed, or they may not give training to an individual that is in fact prone to long-term unemployment. The above discussion is not suggesting that the policy authorities should set an eligibility rule that corresponds to the point at which the group hazard comes to equal the actual hazard of the unskilled. Doing so would not be socially optimal because too great an emphasis would be placed upon the first type of error without regard to the costs of the second type. The socially optimal strategy is to recognize the trade-offs between these types of mistakes and to chart a middle course between them. The actual decision will ultimately be the result of a value judgment and a reflection of the government's budget constraint. Examining the group hazard rate will be helpful in recognizing at what point most of the sorting is complete, and hence in drawing the line between the acceptable costs of each type of error.

Second, it should be recognized that the hazard rates for the individuals in each group may not be constant. In fact, the hazard rate for the group may decline with time unemployed not because of a sorting phenomenon, but because the hazard rate for each individual declines with time. A situation in which the hazard rate is not constant over the course of an unemployment spell for a given individual is referred to as "duration dependence." Under this scenario, the very experience of being unemployed influences the characteristics of the individual or the constraints that they face. The conditional probability of leaving unemployment may decline with time spent unemployed if individuals are prone to discouragement so that their search intensity declines, or if skills deteriorate with time so that the rate of job offer arrivals declines, or even simply if employers believe that skills deteriorate with time so that they prefer to make job offers to individuals who have not been unemployed for long periods.

Much effort has been devoted in the empirical literature to distinguishing between sorting and duration dependence as the source of a declining hazard rate.[4] The distinction in the present case is, however, only of secondary interest.

Any definitive conclusion in this regard requires that extensive controls for both observed and unobserved heterogeneity be incorporated into the analysis. Since the policy issues surrounding the Job Development Program distinguish only between very broad categories of individuals, the main factor behind the movement in the hazard rate is likely to be the sorting phenomenon. Even so, it may well be that both sorting and duration dependence contribute to a decline in the aggregate hazard rate for the group. In this case, the sorting phenomenon will still be reflected in changes in the rate at which the hazard declines.

Indeed, any policy recommendations with respect to the eligibility rule that ignore the possibility of duration dependence will prove to be too conservative. This will be so because the costs of waiting will increase with time when duration dependence is present. For example, if skills and attitudes deteriorate with time spent unemployed, then a long spell of unemployment may very well jeopardize the individual's chance of success in the program. On the other hand, if the perception of employers is that long-term unemployed individuals are inherently of low quality, the credibility of participation in the program may come into question. Participation in the program may simply become a signal of inherent inadequacy rather than a measure of increased productivity.[5]

These two caveats aside, the approach in this paper is to calculate empirical hazard rates for broad groups of individuals, and then to use the observed pattern over time as an indicator of the extent of sorting. The point in time at which the hazard rate becomes flat indicates that sorting is completed. The setting of an eligibility rule longer than this cannot be rationalized on the basis that it will more finely target the expenditures of the programs; rather, it must be taken to reflect a value judgment on how the burden of unemployment should be distributed or the result of budgetary constraints.

Empirical Methodology and Results

The derivation of empirical hazard rates requires data on the lengths of unemployment spells. The hazard-rate calculations in this paper use retrospective data on unemployment spell durations that are derived from the Annual Work Patterns Survey for the years 1978 through 1980, and 1982 through 1985. The survey was not administered in 1982 or in the years since 1985. In fact, 1985 is an appropriate end date for the sample because the Canadian Job Strategy came into effect in September of that year. A different sample of individuals were interviewed each January. They were asked to recall their pattern of labour-force participation for each month of the previous year.[6] The unemployment spell lengths used in this paper are derived from these data by the author.

An unemployment spell is defined to begin when an individual makes a transition from employment to unemployment, and the spell is said to end with a transition back to employment. Transitions between unemployment and not-the-labour-force that may occur after the initial period of unemployment are not distinguished, the implicit assumption being that these two states are not behaviourally distinct. This is done for two reasons. On the one hand, it permits the analysis to be conducted as if there were only two labour-force states and thereby allows simplification in the derivation of the hazard rate. On the other hand, it explicitly recognizes the possibility that individuals may become discouraged over the course of the spell and not engage in job search, a possibility that is within the mandate of the Job Development Program. The data are described in more detail by Corak [1990*a*].

Unemployment spell durations are measured in 0.5-month periods and may vary in length from 0.5 month to 11.5 months: the latter limit being due to the one-year frame adopted by the survey and the definition of how a spell is initiated. It would be ideal if the data could be disaggregated according to the four target groups defined in the CJS. However, the only permissible disaggregation is by gender.[7] Table 1 briefly summarizes the data according to this grouping. The sample consists of a total of 78,986 unemployment spells. This large sample permits the derivation of hazard rates with some precision.

Table 1

Annual Work Patterns Survey Spell Data, 1978-80 and 1982-85

	Number of unemployment spells	Number of completed spells		Number of truncated spells	
Males	50,721	19,643	(38.7)	31,078	(61.3)
Females	28,265	11,236	(39.7)	17,029	(60.2)
Total	78,986	30,879	(39.1)	48,107	(60.1)

(.) Indicates row per cent.

An unemployment spell may be either complete or truncated. Truncation refers to the fact that while the spell may have been observed to begin during the year, it was not observed to have ended so that its exact length is not known. About 60 per cent of the sample is truncated. This large percentage is due to the fact that the horizon of the Annual Work Patterns Survey is only one year in length. The distinction between complete and truncated spells is important for the derivation of the hazard rates.

There are several ways in which empirical hazard rates can be derived from such data. The procedure used here is referred to as the life-table method. It is described in Kalbfleisch and Prentice [1980, pp. 15-19]. A brief summary of the methodology is given in the Appendix. Charts 2 and 3 illustrate the result of this derivation. A complete tabulation of the estimates underlying these figures, along with estimates of the standard errors, is also provided in the Appendix. The hazard rates for the shorter duration intervals have relatively small standard errors, but those for the longer duration intervals are

Chart 2

Hazard Rates, Females

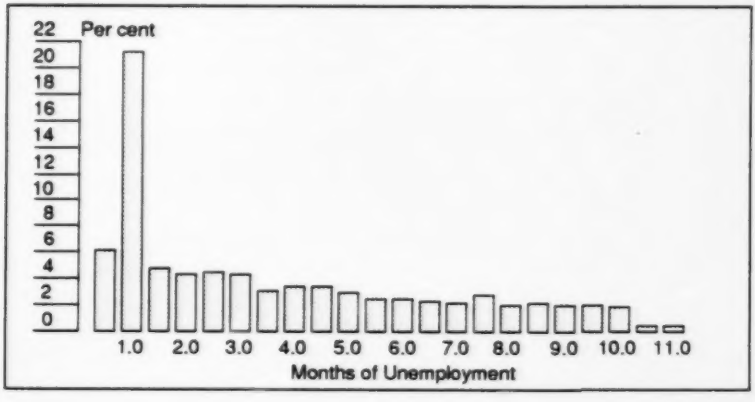
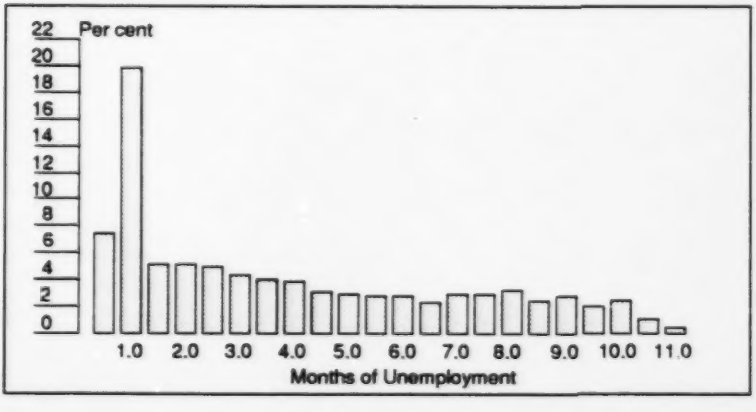


Chart 3

Hazard Rates, Males



rather imprecise. This is due to the fact that there are a relatively small number of observations on completed unemployment spells that last longer than 10 or 11 months.

The pattern of the hazard rate is similar for both males and females. It rises over the course of the first two duration intervals and then declines rapidly. Over the period of three to four months it appears to take another, albeit slight, step downward, and then to remain relatively constant up to about 10 months. The reasons for the rise of the hazard during the first month of unemployment are not evident. There is a possibility that this result may be due to problems in the recall of the exact length of very short spells of unemployment, and a tendency for survey respondents to report such spells as being one month in length. Indeed, some of the results in Beach and Kaliski [1987], who also use Annual Work Patterns Survey spell data, suggest that there is a spike in the number of spells reported to be one month in length.

In any case, the results exclude the possibility that the hazard is constant throughout the spell length. It is fair to say that the probability that an individual will leave unemployment during the first month of a spell is about 15 per cent. Just as importantly, however, is the fact that the major change in the hazard rate occurs during the first month of unemployment. In the context of the discussion in the previous section this result suggests that the great bulk of the sorting in the data occurs within the first month.

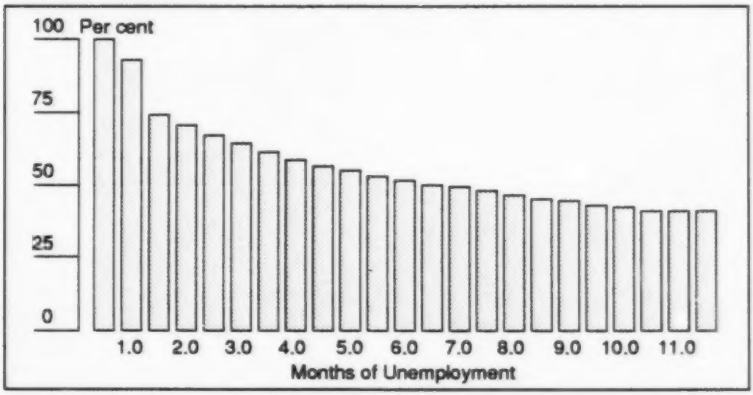
The changes in the hazard rate that occur afterwards are comparatively minor. The argument might be made that it continues to fall up to about the third or fourth month of unemployment. However, afterwards it is pretty well constant, especially when the standard errors are taken into account. During the fourth month of an unemployment spell a male experiences a probability of about 3 per cent that the spell will end and that he will find a job. This probability is about the same during the eighth month. For females the probability of leaving unemployment is not much changed after 3.5 months of unemployment, when it also stands at 3 per cent.

If it is accepted that the changes in the hazard reflect the sorting process, and that a constant hazard indicates that this process has exhausted itself, then the use of a six-month waiting rule for the Job Development Program cannot be rationalized on the basis that it permits a finer targeting of program funds. Rather, it must be interpreted as a mechanism that shifts the burden of unemployment onto the unemployed. It is difficult to suggest exactly what an appropriate rule would be. However, the results do suggest that it should not be eliminated altogether. While six months is probably too long, one month is likely too short. A conservative guess might put the optimal length between three and four months.

In light of these results, the only rationale for a six-month rule must be that the amount of funds allocated to the program do not permit the use of a shorter rule. This raises the following important question: By how much would program participation increase if the eligibility rule were cut in half to say three months? The estimated hazard rates permit a rough response to this question. From the hazard rates one may derive what is referred to as the "Survivor Function." This function reveals what percentage of a cohort of individuals that begin a spell of unemployment are still unemployed after a given length of time. The details of its derivation are given in the Appendix. Chart 4 illustrates the Survivor Function for the aggregate sample of both males and females.

Chart 4

Survivor Function



The height of the bars indicates the percentage of an incoming cohort of individuals that are still unemployed. Since the smallest unit of analysis is 0.5 month, 100 per cent of the sample are still unemployed after 0.5 month. However, this drops sharply during the first month, reflecting the fact that the hazard rate is large during this period. Only 74 per cent of the unemployed stay unemployed for at least 1.5 months.

Continuing in this vein, 52 per cent of those originally unemployed are still unemployed after six months, while about 64 per cent will still be unemployed after three months. Therefore, if the eligibility ruie were cut in half the number of individuals eligible for program participation would increase by about 12 per cent. This result is only suggestive. In particular, it does not take into account any changes in the behaviour of the unemployed as a result of such a reduction in the eligibility rule. Nonetheless, it does not appear that a reduction of the eligibility rule would necessarily open the flood gates to

program participation. Most of the people that are still unemployed after three months will also be unemployed after six months.

Conclusions

Eligibility rules for entrance to government-sponsored training or wage subsidy programs such as the six-month rule employed in the Job Development Program of the Canadian Job Strategy serve an important purpose in the context of imperfect information about which unemployed individuals are most likely to go on to experience long periods of unemployment. They, in effect, sort the unemployed into those individuals requiring assistance and those that are able to return to employment on their own. This allows the government to more effectively target its funds. This sorting, however, does not come without a cost. The inability of the government to identify those individuals likely to become long-term unemployed before they actually spend long periods without a job implies that these individuals must carry a dead-weight burden, and that society must forgo the output that they could have produced. An appropriately set eligibility rule is one that balances these costs against the gains.

The results obtained in the present paper lend support to the view that the six-month eligibility rule used in the Job Development Program is too long. The great bulk of the sorting is completed after the first month of unemployment. The sorting process is virtually exhausted after approximately three to four months. A three-month rule is about as effective a sorting mechanism as is a six-month rule. Thus, the six-month rule does more to shift the burden of unemployment onto the unemployed than it does to target the funds of the program onto those most in need.

Two related policy recommendations flow from these results. First, the government should reduce the eligibility rule and increase the amount of funding devoted to the Job Development Program. The results of this paper suggest that a 10-to-15-per-cent increase in funding would suffice to reduce the eligibility rule to three months. This is suggestive, but not definitive. It should be interpreted as a preliminary estimate because no attempt has been made to recognize any changes in behaviour that the reduction in the rule might induce. In the final analysis the exact setting of the eligibility rule will reflect the amount of resources devoted to the program, as well as an implicit value judgment with respect to how the burden of unemployment should be shouldered.

The second policy recommendation deals with the development of mechanisms that might reduce the severity of the trade-off that is bound up in the use of a waiting rule. In the first instance, the government could attempt to

use more detailed information to decide whether a given individual is likely to become long-term unemployed. The target groups stipulated in the Canadian Job Strategy are too wide to permit a fine targeting of funds.

For example, Corak [1990*b*] finds that the length of time until a new job is found is positively related to age, length of employment in the previous job, and the relative wage earned in the occupation of last employment. It is also negatively related to educational attainment. Detailed information of this sort should be used to determine if an individual is a candidate for the program. The unemployed individual's former employer or union should also be engaged more actively in determining if he or she should participate in the program. These agents are likely to have a great deal of information that would not be immediately apparent to program administrators and that could be used to recommend whether the individual should be accepted into the program.

The government might also consider the development of alternative sorting mechanisms that would lead the potentially long-term unemployed to self-select themselves into the program. Are there administrative mechanism or program design features that would cause only those individuals that need the program to apply for its benefits?

These issues should be given consideration in future policy debates concerned with the Canadian Job Strategy.

Appendix

The derivation of the hazard rates uses the life-table method with intervals defined by the 0.5 month intervals in which the data are measured. The procedure is outlined in Kalbfleisch and Prentice [1980, pp. 15-19] and may be briefly described as follows. If t indexes spell duration, and j indexes the duration intervals, then the number of individuals that face the possibility of ending their spell of unemployment at the jth interval is $n_j \equiv \sum_{t \geq j} (d_t + m_t)$ where d_t represents the number of completed spells of duration t, and m_t represents the number of truncated spells of similar duration. The life-table estimator of the conditional probability that a spell will end during interval j is given as $h_j = d_j / [n_j - m_j / 2]$. Intuitively, this is the number of spells that actually end during the interval divided by the number of spells that could potentially have ended, adjusted for the fact that not all of the n_j spells are at risk of ending for the entire interval.

The results of these calculations based upon the entire sample of unemployment spell data derived from the Annual Work Patterns Survey are presented in Table A-1. All calculations were performed by using the S.A.S. procedure LIFETEST. Corak [1990*a*] presents similar derivations with the same data but offers a disaggregation by year.

The "Survivor Function" is a representation of the probability that an unemployment spell will last longer than some stated length of time. It is derived from knowledge of the hazard rates as $S_t = \prod_{j=1}^{t} (1 - h_j)$. Intuitively, this is the probability that the individual does not leave unemployment during the first period multiplied by the probability that he or she does not leave during the second, and so on up to period t. The results of these derivations along with the associated standard errors are given in Table A-2.

Table A-1

Empirical Hazard Rates by Gender, AWPS Data, 1978-80 and 1982-85

	Total sample	Males	Females
Duration interval (months)			
0.0-0.5	0.0703 (0.0009)	0.0746 (0.0012)	0.0627 (0.0015)
0.5-1.0	0.2031 (0.0016)	0.1976 (0.0020)	0.2125 (0.0026)
1.0-1.5	0.0504 (0.0010)	0.0513 (0.0013)	0.0488 (0.0016)
1.5-2.0	0.0486 (0.0011)	0.0515 (0.0014)	0.0438 (0.0016)
2.0-2.5	0.0475 (0.0011)	0.0491 (0.0015)	0.0449 (0.0018)
2.5-3.0	0.0435 (0.0012)	0.0436 (0.0015)	0.0435 (0.0019)
3.0-3.5	0.0369 (0.0012)	0.0407 (0.0016)	0.0311 (0.0017)
3.5-4.0	0.0366 (0.0012)	0.0381 (0.0016)	0.0343 (0.0019)
4.0-4.5	0.0326 (0.0013)	0.0317 (0.0016)	0.0338 (0.0021)
4.5-5.0	0.0301 (0.0013)	0.0301 (0.0017)	0.0301 (0.0021)
5.0-5.5	0.0267 (0.0013)	0.0279 (0.0018)	0.0249 (0.0020)
5.5-6.0	0.0263 (0.0015)	0.0273 (0.0019)	0.0247 (0.0023)
6.0-6.5	0.0235 (0.0016)	0.0233 (0.0020)	0.0240 (0.0025)
6.5-7.0	0.0262 (0.0018)	0.0287 (0.0023)	0.0219 (0.0027)
7.0-7.5	0.0290 (0.0020)	0.0298 (0.0026)	0.0277 (0.0033)
7.5-8.0	0.0278 (0.0022)	0.0318 (0.0029)	0.0207 (0.0032)
8.0-8.5	0.0240 (0.0022)	0.0253 (0.0028)	0.0216 (0.0036)
8.5-9.0	0.0256 (0.0026)	0.0285 (0.0034)	0.0200 (0.0040)
9.0-9.5	0.0205 (0.0027)	0.0209 (0.0034)	0.0197 (0.0046)
9.5-10.0	0.0222 (0.0034)	0.0245 (0.0044)	0.0179 (0.0051)
10.0-10.5	0.0089 (0.0027)	0.0114 (0.0038)	0.0045 (0.0032)
10.5-11.0	0.0044 (0.0025)	0.0047 (0.0033)	0.0040 (0.0040)
11.0-11.5	0.0000 (. . .)	0.0000 (. . .)	0.0000 (. . .)

( ) Indicates standard error.
(. . .) Indicates undefined.

Table A-2

Empirical Survivor Functions by Gender, AWPS Data, 1978-80 and 1982-85

	Total sample	Males	Females
Duration interval (months)			
0.0-0.5	1.0000 (0.0000)	1.0000 (0.0000)	1.0000 (0.0000)
0.5-1.0	0.9297 (0.0009)	0.9254 (0.0012)	0.9373 (0.0015)
1.0-1.5	0.7409 (0.0016)	0.7425 (0.0020)	0.7381 (0.0027)
1.5-2.0	0.7036 (0.0017)	0.7044 (0.0022)	0.7021 (0.0029)
2.0-2.5	0.6694 (0.0018)	0.6682 (0.0023)	0.6714 (0.0030)
2.5-3.0	0.6376 (0.0019)	0.6353 (0.0024)	0.6412 (0.0031)
3.0-3.5	0.6099 (0,0019)	0.6077 (0.0024)	0.6134 (0.0032)
3.5-4.0	0.5874 (0.0020)	0.5830 (0.0025)	0.5943 (0.0032)
4.0-4.5	0.5658 (0.0021)	0.5607 (0.0026)	0.5739 (0.0033)
4.5-5.0	0.5474 (0.0021)	0.5430 (0.0027)	0.5545 (0.0034)
5.0-5.5	0.5310 (0.0022)	0.5266 (0.0028)	0.5378 (0.0035)
5.5-6.0	0.5168 (0.0022)	0.5119 (0.0029)	0.5244 (0.0036)
6.0-6.5	0.5032 (0.0023)	0.4980 (0.0029)	0.5115 (0.0037)
6.5-7.0	0.4914 (0.0024)	0.4864 (0.0030)	0.4992 (0.0038)
7.0-7.5	0.4785 (0.0025)	0.4724 (0.0032)	0.4883 (0.0040)
7.5-8.0	0.4646 (0.0026)	0.4584 (0.0033)	0.4748 (0.0042)
8.0-8.5	0.4517 (0.0027)	0.4438 (0.0035)	0.4650 (0.0044)
8.5-9.0	0.4409 (0.0028)	0.4326 (0.0036)	0.4549 (0.0046)
9.0-9.5	0.4296 (0.0030)	0.4203 (0.0038)	0.4458 (0.0048)
9.5-10.0	0.4208 (0.0032)	0.4115 (0.0040)	0.4371 (0.0052)
10.0-10.5	0.4114 (0.0034)	0.4014 (0.0043)	0.4292 (0.0056)
10.5-11.0	0.4077 (0.0035)	0.3968 (0.0045)	0.4273 (0.0057)
11.0-11.5	0.4060 (0.0037)	0.3950 (0.0046)	0.4256 (0.0059)

( ) Indicates standard error.

Notes

1 The actual eligibility criterion for the Job Development Program requires that the individual be "out of work" for at least 24 of the last 30 weeks.

2 The literature dealing with the theoretical and empirical study of hazard rates for the duration of unemployment is much too vast to review in any reasonable degree. The interested reader is referred to Kiefer [1988] for an overview of the analytics underlying much of this work as well as for a partial literature review.

3 For the most part, the assistance offered under the Job Development Program entails a subsidization of training costs. Training may be formal in class training at an educational institute or may occur on the job. Wage subsidies are provided to employers that create three or more jobs that last between 16 and 52 weeks. Commercial employers are paid 60 per cent of wages to a weekly maximum of $300 per participant and as much as $8 per participant training hour. Wages for administrative staff are also paid [Rahman and Gera, 1990, pp. 51-52].

4 Corak [1990*b*], and Ham and Rea [1987] are two examples that use Canadian data to study the behaviour of the hazard rate. Ham and Rea suggest that the hazard is U-shaped for individuals that receive unemployment insurance benefits. It eventually rises with time as individuals respond to the exhaustion of their benefit payments. Corak uses data drawn from the Labour Market Activity Survey and distinguishes between unemployment spells that end with non-participation, recall to the previous employer, and a job with a new firm. It is found that the hazard rate for a job with a new firm is roughly constant, while the rate for the other two types of exits first rises and then falls.

5 I thank K. Newton and L. Osberg for emphasizing these points.

6 Thus the horizon 1978-85 refers not to the year of the interview, but to the actual survey year. In fact, the Annual Work Patterns Survey (AWPS) was conducted in January of 1978 so that data for 1977 do exist. These, however, were excluded from the analysis because the questionnaire was subsequently changed.

7 The Annual Work Patterns Survey is conducted on a sample of individuals drawn from the January Labour Force Survey. Thus Aboriginal peoples are likely to form a very small number of the sample, because the Labour Force Survey is not conducted upon Indian reserves. Furthermore, there is no information in the survey that would permit one to distinguish visible

minorities and disabled individuals. An earlier version of this paper did pursue a disaggregation by age and by province. The results for these subgroups were no different than those reported here.

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